

AMENDMENTS TO THE CLAIMS

The following listing of claims will replace all prior versions and listings of claims in the application.

LISTING OF CLAIMS

- 1-9. (Withdrawn)
10. (Previously Presented) A method of operating a fuel cell system comprising:
monitoring an air mass flow rate from a compressor to a fuel cell stack with a flow meter;
modeling said flow meter with a first mathematical formula;
generating a measured signal from said flow meter;
processing said first mathematical formula and said measured signal through a KF-based signal processing algorithm to provide a future signal estimate; and
operating said compressor based on said future signal estimate.
11. (Original) The method of claim 10 wherein said first mathematical formula consists of a 3rd order model of said flow meter.
12. (Original) The method of claim 10 further comprising predicting a current signal estimate based on a previously smoothed signal estimate.

13. (Original) The method of claim 12 wherein said previously smoothed signal estimate is determined based on a previously predicted estimate, a previous signal measurement and a previous gain.

14. (Original) The method of claim 12 further comprising calculating a smoothed current signal estimate based on a predicted current estimate, a current measurement and a gain.

15. (Original) The method of claim 14 wherein said future signal estimate is based on said smoothed current signal estimate.

16. (Original) The method of claim 15 wherein said future signal estimate is further based on a current command signal.

17. (Original) The method of claim 16 further comprising:
modeling a compressor command signal with a second mathematical formula;
and
calculating said current command signal based on said second mathematical formula.

18-22. (Withdrawn)

23. (Currently Amended) A method of operating a fuel cell system for catalytically reacting a feed stream in a fuel cell comprising:

modeling a flow control element with a first mathematical formula to create a predictive estimation filter;

operating said flow control element to provide a feed stream to a fuel cell at a condition;

monitoring said flow control element and generating a measurement signal of said feed stream based on said condition;

converting said measurement signal into a smooth state signal through use of said predictive estimation filter; and

regulating said flow control element in response to said smooth state signal.

24. (Original) The method of claim 23 wherein said predictive estimation filter comprises a Kalman filter.

25. (Currently Amended) The method of claim 24 further comprising operating [a] said flow control element to provide a reactant feed stream to said fuel cell at a flow rate.

26. (Currently Amended) The method of claim 24 further comprising operating a compressor to provide said reactant feed stream to said fuel cell at a flow rate.